UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/176,124	10/21/1998	GERHARD SCHNEIDER	10191/857	7808

26646 7590 01/29/2003

KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER
TUNG, TA HSUNG

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 01/29/2003

29

Please find below and/or attached an Office communication concerning this application or proceeding.

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER OF
PATENTS AND TRADEMARKS
Washington, D.C. 20231

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 29

Serial Number: 09/176,124
Filing Date: October 21, 1998
Appellant(s): Gerhard Schneider etal.

Richard L. Mayer
for Appellant

EXAMINER'S ANSWER

This is in response to Appellant's brief on appeal filed Dec. 16, 2002.

(1) *Real Party in Interest.*

Appellant has stated that the real party in interest is the appellants and Robert Bosch GmbH.

(2) *Related Appeals and Interferences.*

Appellant has stated that he is aware of no related appeal.

(3) *Status of claims.*

This appeal involves claims 1 and 3-7.

(4) *Status of Amendments After Final.*

The amendment of August 12, 2002 has been entered.

(5) *Summary of invention.*

The summary of invention contained in the brief is correct.

(6) *Issues.*

The Appellant's statement of the issues in the brief is correct.

(7) *Grouping of claims.*

Appellant's grouping of the claims is believed to be improper. Claims 6 and 7 are dependent upon claim 5, but are grouped with claim 1 instead of claim 5. Accordingly, appellant's groupings are modified as follows:

Group 1: Claim 1 alone

Group 2: Claims 3 and 4 stand or fall together

Group 3: Claims 5-7 stand or fall together

Since appellant did not separately argue claims 6 and 7, it is clear that changing the grouping of these claims has not in any way prejudiced appellant's position.

(8) *Claims appealed.*

A correct copy of the claims on appeal is contained in the Appendix to the brief.

(9) *Prior Art of record.*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

4,505,806	Yamada	3-85
4,505,807	Yamada	3-85
5,529,677	Schneider etal (Schneider)	6-96

(10) *New prior art.*

No new prior art has been applied in this Examiner's Answer.

(11) *Grounds of rejection.*

The following ground(s) of rejection are applicable to the appealed claims.

I. Claims 1 and 3-5 stand rejected under 35 USC ~~103(a)~~ 102(b) as being unpatentable over Yamada `806 or Yamada `807.

Yamada `806 discloses (figures 7-9) a heater 16a located in a plane half way between the top and the bottom of a solid electrolyte sensor. The heater is sandwiched between two insulating layers 13'b and 13'a. See col. 6, lines 17-63. Incidentally, there is an incorrect labelling in figure 9. Nnumeral 13'a as shown in in the figure should actually be 13, and 13'a is actually the layer directly below 13'b. That this is the case is evident from the discussion at col. 6, lines 36-42 of the patent. It should also be noted that layer 13', which is an intermediate board layer defining a gas chamber and gas inlets 9 corresponds to intermediate board layer 7. At col. 6, lines 21-25, the patent discloses alumina to be a suitable material for the intermediate board layer. Therefore, layers 13'b and 13'a of figure 9 can be of alumina, which is an insulating material.

Yamada `807 discloses (figures 1-3) a heater 13 located in a plane half way between the top and the bottom of a solid

electrolyte sensor. The heater is sandwiched between insulating layers 3 and 6. See col. 3, line 23 to col. 8, line 47.

It is the examiner's position that since the heater in each of the Yamada references is located about half way up the sensor, the same as appellant's heater, the heater would act to provide an approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure (as recited at lines 14-16 of appealed claim 1).

II. Claims 1 and 3-7 stand rejected under 35 USC 103(a) as unpatentable over Schneider in view of either Yamada.

Schneider discloses appellant's basic sensor element including a heating element 27 embedded between two insulating layers 26, 28, which are surrounded by sealing frames 26', 28'. See figure 3; col. 2, line 29 to col. 4, line 19. Appellant's claims differ by calling for the heater to be located in a plane that is centered with respect to the sensor element (i.e. half way up the sensor element).

As discussed before, either Yamada discloses a heater located in a plane half way between the top and the bottom of a sensor element.

It would have been obvious for Schneider to arrange its heater in a plane half way up the sensor as shown by either Yamada, because such a location would permit distribution of heat to all portions of the sensor element equally. If a heater were

located at the bottom of a heater, heat at the top would clearly be less than heat at the bottom. The resulting temperature gradient may cause inaccurate measurement as well as cause damage due to thermal shock. The combination of the references is believed to be especially obvious in view of the statement at col. 9, lines 25-29 of Yamada `807 that his heater acts to efficiently heat the entire oxygen sensor.

Response to arguments.

In response to rejection I, appellant argues that neither Yamada reference discloses the ▒covering layer▒ recited at line 5 of instant claim 1.

This covering layer is element 32 of appellant's only figure and is not element 26, which is described as a ▒cover layer▒ at page 4, line 8 of the specification. Layer 32 acts to cover the heater and support the other components of the sensor element.

It is appellant's position that the examiner's reliance upon the bottom layer in figure 9 of Yamada `806 or bottom layer 1 of Yamada `807 as the ▒covering layer▒ is flawed, because these layers are actually ▒functional layers▒ with electrodes and are not intended to act as a ▒covering layer▒.

This argument is considered to be without merit. It is not even clear what appellant means by a ▒functional layer▒. Note that the layer in question (appellant's layer 32) clearly

functions as a cover and a support substrate. Why would not these functions make layer 32 a ▒functional layer▒?

There is absolutely nothing in appellant's claim language that would exclude the ▒covering layer▒ from having electrodes or acting also in a capacity other than as a cover. The bottom layer of Yamada `806 clearly covers the heater and the measuring cell top layer 13 (incorrectly labelled as 13'a) in the indentical manner that appellant's bottom layer 32 covers the heater and measuring cell layer 12. Similarly, bottom layer 1 of Yamada `807 covers the heater and the measuring cell layer 2.

A claim may only be interpreted by what is set forth, not by some hidden meaning that is indefinite in scope and by which appellant is not bound.

Appellant also argues that neither Yamada discloses or suggests that its heater distributes heat approximately homogeneously over a perpendicular cross-section of the sensor element, and that such homogeneous distribution of heat would be prevented by insulation layer 6 of Yamada `807, which is made of a material different from the material of the measuring cell layer and is applied asymmetrically.

This argument is also considered to be without merit. The heater in either Yamada will inherently act to distribute heat in the same manner as that of appellant's heater because the

patented devices have the same structure as that recited by appellant's claims.

Also, the statement at col. 9, lines 25-29 of Yamada `807 is seen to strongly suggest that its heater distributes the heat evenly because the entire sensor element is heated efficiently.

As for insulating layer 6 of Yamada `807, it is electrically insulating, not thermally insulating. There is no reason why this layer would prevent the homogeneous distribution of heat. Note that insulating layer 6 is made of alumina, just as insulating layer 3 on the other side of the heater. Therefore, the two alumina layers should affect heat distribution in the same manner. Furthermore, appellant's insulating layers 28, 29 sandwiching heater 30 are also both made of alumina. Thus, if appellant's insulating alumina layers surrounding the heater do not prevent the homogeneous distribution of heat, the insulating layers 6, 3 of Yamada `807 would also not prevent the homogeneous distribution of heat. Similarly, alumina insulating layers 13'b, 13'a surrounding the heater 16a in Yamada `806 would not prevent the homogeneous distribution of heat.

Appellant's argument that insulation layer 6 of Yamada `807 is asymmetrically applied on the sensor element is not totally clear. If appellant is stating that there is no corresponding insulating layer on the other side of the heater, that is incorrect, since the patent shows such an insulating layer 3 made

of the same material as layer 6. If appellant is stating that layer 3 is thicker than layer 3, the very slight difference shown between the two layers' thicknesses is not considered to be sufficiently great as to affect the homogeneous distribution of heat, even assuming figure 2 of the patent shows the actual relative thicknesses of the two layers. Certainly appellant has made no showing to the contrary.

Also, this asymetrically applied argument would not be germaine to Yamada `806, which shows layers on both sides of the heater to have equal thickness.

Appellant also argues that Yamada `807 fails to teach a heater in a plane that is centered with respect to the sensor element or any other specific placement of the heater.

This argument is not persuasive.

Either Yamada shows a heater in a plane centered with respect to a sensor element. Whether the patents expressly state the desirability of a particular heater location is irrelevant.

In regard to claim 3, appellant argues that neither Yamada discloses the additional feature that the measuring cell layer includes at least two measuring cell layer foils.

This argument is not persuasive.

The wording of claim 3 does not require the final structure of the sensor element to have a measuring cell layer comprising at least foils. Instead, it is stated that in the manufacture of

the sensor element there are at least two such foils prior to sintering. The sintering process would unite the two foils into one layer. This is especially so when the two foils are made of the identical substance. How would one even know where one layer ends and the other layer begins?

In regard to claim 5, appellant argues that Yamada `806 does not disclose insulating layers whatsoever and Yamada `807 discloses only a single insulating layer 6.

This argument is not persuasive.

As discussed before, in figure 9 of Yamada `806, layers 13'b and the layer directly beneath it (should be labelled as layer 13'a) can both be made of alumina, which is clearly an insulating material. See col. 6, line 25. Layers 13'b and 13'a sandwich the heater.

As to Yamada `807, layers 6 and 3 are both made of alumina. See col. 4, lines 59-60 and col. 5, lines 37- 44.

In regard to rejection II, appellant argues that there is no motivation to combine the references. It is contended that the motivation of homogeneous heating to prevent thermal stress is one supplied by appellant and thus may not be used against him. Further, appellant does not admit that it is common knowledge that electrolytic measurement is temperature-sensitive or that significant temperature gradient between different portions of an element can cause thermal stress cracking.

This argument is not persuasive.

To start with, the teaching at col. 9, lines 25-29 of Yamada '807 ▒acts to efficiently heat the entire oxygen sensor▒ is considered to strongly suggest that its placement of the heater would evenly distribute the heat. Otherwise, the entire sensor would not be efficiently heated. Since the heater placement shown by the patent is half way up the sensor, one of ordinary skill in the art would easily discern the desirability of locating a heater half way up a sensor element. Also, it would have been readily obvious to any one that if a heater is located at one extremity (top or bottom) of the sensor, the extremity where the heater is not located would not receive the same heat as the other extremity.

As for the measurement being temperaure-sensitive, appellant is undoubtedly aware of the well-known Nernst equation that governs electrochemical sensors, $E = K + 2.3\ RT/zF\ \log A$, where E is the potential developed, K is a constant, A is the activity of the ion in question, z is its charge and RT/F is the Nernst factor that is temperature dependent (T representing temperature).

As for significant temperature gradient at different portions of an element causing thermal stress, that is fundamental physics. The Board can certainly take judicial notice of that fact. Even though appellant teaches this

phenomenon as a reason for his heater placement, it is believed that he may not preempt that reason as a basis for combining prior art if that phenomenon is well-known.

Appellant appears to suggest that he is the discoverer of the phenomena that electrochemical measurements are temperature sensitive and that significant temperature gradient can cause thermal stress. If so, he should clearly state that of record.

In regard to claims 3 and 5, appellant makes the same arguments as before. The prior art does not disclose a measuring cell layer comprising at least two foils, and that the prior art does not disclose insulating layers around the heater.

These arguments are non-persuasive here as before. Claim 3 does not actually call for two foils in the final sensor structure, and both Yamada references show insulating layers around the heater.

Additionally, for claim 5, Schneider clearly shows heater 27 embedded within insulation layers 26 and 28. See figures 2 and 3. Appellant's argument to the contray appears to directly contradict this showing.

Respectfully submitted,

APPEAL CONFEREE: Robert J. Warden, Sr.

Ta Tung
Primary Examiner
Art Unit 1743

Serial Number: ~~08/255,010~~ 09/176,124

Art Unit: ~~1102~~ 1743

~~12~~

T. Tung
January 24, 2003

Kenyon & Kenyon
One Broadway
New York, New York 10004
(212) 425-7200

APPEAL CONFEREE: Robert Y. Warden, Jr.